

B.Sc. NUCLEAR MEDICINE TECHNOLOGY**SECOND YEAR****PAPER I – PHYSICS OF NUCLEAR MEDICINE INSTRUMENTATION***Q.P. Code: 802111***Time: Three Hours****Maximum: 100 Marks****Answer all questions****I. Elaborate on: (3 x 10 = 30)**

1. A leading Medical Imaging Institution acquired a Gold Seal (Pre-owned) Gamma Camera. What are the types of Gamma Cameras and quality parameters required to evaluate its performance while its being installed in its premises?
2. What are Scintillation Detectors? Explain the various crystals currently available for PET Imaging and compare them with Sodium Iodide Detectors.
3. Explain in detail about the various precautions to be adopted while handling open, unsealed, radioactive active elements.

II. Write notes on: (8 x 5 = 40)

1. TLD Badges.
2. Effective Dose to the Body.
3. Spectrum Resolution of the Gamma Imaging Equipment.
4. Filtered Back Projection.
5. Dynamic Imaging.
6. Dead time of a Gamma Camera.
7. Beta Emitting Radionuclides.
8. Stable Nuclei.

III. Short answers on: (10 x 3 = 30)

1. Radioactive Technetium.
2. Positron Emitting Isotopes.
3. Physical Half Life.
4. Pair Production.
5. Isomeric Transition.
6. Static Imaging.
7. Temporal Resolution.
8. Formula to calculate Effective Dose to the Patient.
9. Liquid Scintillation Counter.
10. Poisson distribution.